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Original Article

Inadequate completion of surgical data for patient safety: opinion of health professionals*

Preenchimento inadequado de dados cirúrgicos para segurança do paciente: opinião de profissionais da saúde

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ABSTRACT

Objective: to investigate variables related to inadequate completion of surgical data for patient safety in the hospital setting in the opinion of health professionals. **Methods:** retrospective study in 180 medical records of surgical patients in a public hospital and application of a structured questionnaire to caregivers responsible for filling out the surgical data of patients. Descriptive statistical analysis was performed. **Results:** the medical records showed incomplete surgical records in the preoperative period (61%), intraoperative period (66%) and immediate postoperative period (87%). Professionals reported not knowing the protocol for safe surgery (62%) and the institution's surgical safety form (68%), 87% were not trained to use the intraoperative checklist, 66% considered the number of staff inadequate and 55% considered communication ineffective. **Conclusion:** in the opinion of health professionals, insufficient professional knowledge, lack of training, inadequate staffing and ineffective communication may be related to inadequate completion of surgical data and patient safety.
Descriptors: Surgical Procedures, Operative; Checklist; Hospitals; Patient Safety.

RESUMO

Objetivo: investigar variáveis relacionadas com o preenchimento inadequado de dados cirúrgicos para a segurança do paciente no contexto hospitalar na opinião de profissionais de saúde. **Métodos:** estudo retrospectivo em 180 prontuários de pacientes cirúrgicos em um hospital público, com aplicação de questionário estruturado aos profissionais assistenciais responsáveis pelo preenchimento de dados cirúrgicos. Realizou-se análise estatística descritiva. **Resultados:** os prontuários apresentaram incompletude nos registros cirúrgicos nos períodos pré-operatório (61%), intraoperatório (66%) e pós-operatório imediato (87%). Os profissionais referiram desconhecer o protocolo para cirurgia segura (62%) e o formulário de segurança cirúrgica da instituição (68%), sendo que 87% não receberam capacitação para utilização do checklist intraoperatório, 66% consideraram o dimensionamento de pessoal inadequado e 55%, a comunicação ineficaz. **Conclusão:** na opinião dos profissionais de saúde, conhecimento profissional insuficiente, ausência de capacitação, dimensionamento de pessoal inadequado e comunicação ineficaz podem estar relacionados com o preenchimento inadequado dos dados cirúrgicos e segurança do paciente.
Descritores: Procedimentos Cirúrgicos Operatórios; Lista de Checagem; Hospitais; Segurança do Paciente.

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Introduction

Surgical procedures are related to imminent health risks and require the continuous adoption of measures for patient safety. However, despite the implementation of prevention initiatives such as campaigns promoted by the World Health Organization (WHO), the occurrence of adverse events associated with surgical procedures is still a reality experienced by health institutions[1].

Adverse event is defined as an incident that results in harm to the patient, which can be avoided in different situations by adopting patient safety measures. In surgical procedures, the adoption of safe and systematic practices for perioperative care can directly influence the reduction of adverse events[2]. Surgical safety, mortality reduction and surgical complications reduction represent one of the WHO goals for patient safety, addressed in the topic called Safe Surgeries Save Lives, which led to the development of a Surgical Safety Checklist to minimize the occurrence of surgical adverse events[3-4].

The Surgical Safety Checklist or safe surgery checklist, developed by the WHO as part of the Safe Surgeries Save Lives program, is an important tool to be used by professionals for the prevention of adverse events, presenting four important pillars for surgical patient safety - prevention of surgical site infection, anesthesia safety, teamwork and improved communication, and measurement of care - in the form of an easy-to-fill checklist[4].

Positive impacts of proper completion of the Surgical Safety Checklist include, for example, the reduction in mortality rate and surgical complications[5]. However, its adoption needs to be better worked on in the healthcare field, since failures and resistance in its use are still identified, as, for example, in the analysis of the checklist completion in Brazilian hospitals that identified an average completion rate lower than 80% for most items, suggesting low adherence in its use[6].

Aspects on adherence to the safe surgery checklist and implementation impacts are evaluated in the literature[4-6]. However, for surgical safety, it is necessary that data records are complete and available not only in the transoperative period, but also in the pre- and postoperative periods. The variables related to inadequate completion of data may reveal other contexts such as poor knowledge and inadequate staffing, which can directly interfere with the quality of patient care.

In this sense, the present study aimed to investigate variables related to inadequate completion of surgical data for patient safety in the hospital setting in the opinion of health professionals.

Methods

This is a retrospective research in medical records of surgical patients and with the application of a questionnaire to health care professionals from the surgical clinic unit and the surgical center of a public hospital located in the Northeast Region of Brazil.

The hospital has a 24-hour pediatric, general and traumatologycal urgency and emergency service, and has a Surgical Center Unit with four operating rooms, a pre-operative room with two beds, a post-anesthetic recovery room with five beds and 35 beds for surgical patients, 10 for Day Hospital demand, with a complete health team for elective and urgent surgeries.

In the first stage of the study, the sampling was non-probability, convenience type, and two final-year undergraduate nursing students collected information from all the medical records of patients (n=180) who underwent surgical procedures in the months of January to March 2018, stored in the Medical Archives Service.

A checklist was prepared to verify information in the perioperative period (preoperative, intraoperative, and immediate postoperative), with the option 'yes' for variables properly filled out, or 'no' for those not filled out, incomplete or duplicate. A total of 26

variables were evaluated, among these, the registration of the patient's vital signs, entrance/exit times of the sectors, name and signature of the professionals involved. The instrument was developed based on the WHO recommendations for safe filling of surgical data and was pilot tested, with few modifications. The average time for analysis and checking of each chart was 15 minutes.

In the second stage of the study, the researchers applied a structured questionnaire to 47 of a total of 57 caregivers responsible for completing the Surgical Safety Checklist. They were: one physiotherapist (2.1%), three instrumentalists (6.4%), 10 nurses (21.3%), 19 nursing technicians (40.4%), and 14 nursing assistants (29.8%). Four professionals refused to participate in the research, one was on legal leave, and five were excluded after participating in a pilot test of the collection instrument. The professionals were contacted personally in the months of September and October 2018 at times indicated with lower demand of work on duty, with data collection in a reserved place and with an average time of completion of eight minutes.

The questionnaire, designed by the researchers, contained personal/professional identification data and 12 more questions with 'yes or no' answer possibilities about factors related to safe surgery data completion and use of the Surgical Safety Checklist, such as knowledge, training, perceptions, nurse sizing, personal satisfaction, and workplace communication.

The students who conducted the data collection went through an eight-hour training course with the senior researcher, applied the pilot tests, and were already inserted in the hospital field by means of their undergraduate curricular internship.

Data were tabulated in Microsoft Office Excel and analyzed using the Statistical Package for the Social Sciences, version 20.0 for Windows, using descriptive statistical analysis to obtain absolute and percentage frequency distributions. The ethical and legal aspects in research involving human beings were observed and the project was approved by the Research Ethics Committee with Certificate of Submission for Ethical Appreciation No. 95482718.9.0000.5546, opinion No. 2,897,500/2018, and the participants signed the Informed Consent Form.

Results

The preliminary survey in medical records showed that, among the 180 records analyzed, 118 (66.0%) belonged to male patients and 62 (34.0%) to female patients, with a mean age of 38.97 years, minimum age of one and maximum of 89 years. Patients who underwent surgical procedures at the institution came mainly from cities in the state of Sergipe: Lagarto (79; 44.0%), Tobias Barreto (18; 10.0%) and Simão Dias (16; 9.0%).

The surgical time with the highest percentage of adequacy in the records of the information collected in surgical procedures corresponded to the preoperative period (39.0%), followed by the intraoperative period (34.0%), and the lowest adequacy was related to the immediate postoperative period (13.0%). Data on the completion of fundamental variables for patient safety in surgical procedures by collection in medical records and distributed in relation to the preoperative, intraoperative, and immediate postoperative surgical times are described in Table 1.

In the preoperative period, the variable with the highest percentage of record was related to patient locomotion (46.0%), while the lowest percentage was related to the vital signs of patients, with 71.0% of incomplete/absent records. In the intraoperative period, the variable with the highest percentage of registration corresponded to the time of entry into the operating room (43.0%), while the lowest percentage corresponded to the registration of the room circulator (19.0%). The appropriateness of recording information about the location of equipment in the patient during the transoperative period was also evaluated, identifying that only 23.0% of records in surgical procedures were considered adequate.

Table 1 – Variables filled in surgical procedures according to preoperative, transoperative and immediate postoperative surgical times. São Cristóvão, SE, Brazil, 2018

Recorded variables	Yes	No
	n (%)	n (%)
Pre-operative		
Preoperative diagnosis	76 (42.0)	104 (58.0)
Vital signs	53 (29.0)	127 (71.0)
Locomotion	82 (46.0)	98 (54.0)
Chronic diseases	77 (43.0)	103 (57.0)
Prostheses	70 (39.0)	110 (61.0)
Surgical preparation	55 (31.0)	125 (69.0)
Registration of responsible professional	80 (44.0)	100 (56.0)
Intraoperative		
Surgery Center Entry Time	77 (43.0)	103 (57.0)
Surgery start time	74 (41.0)	106 (59.0)
Surgery end time	63 (35.0)	117 (65.0)
Anesthesia	57 (32.0)	123 (68.0)
Surgical position	60 (33.0)	120 (67.0)
Surgeon in charge	55 (31.0)	125 (69.0)
Room circulator	35 (19.0)	145 (81.0)
Registration of responsible professional	67 (37.0)	113 (63.0)
Immediate Post-Operative		
Time of entry into Post-anesthesia Recovery	40 (22.0)	140 (78.0)
Time of exit from Post-anesthesia Recovery	15 (8.0)	165 (92.0)
Aldrete and Kroulik index	20 (11.0)	160 (89.0)
Vital signs - blood pressure	30 (16.6)	150 (83.4)
Vital signs - heart rate	26 (14.5)	154 (85.5)
Vital signs - respiratory rate	10 (55)	170 (94.5)
Vital signs - temperature	7 (3.9)	174 (96.1)
Nursing notes and prescriptions	34 (19.0)	146 (81.0)
Administered medications	3 (2.0)	177 (98.0)
Patient's destination sector	30 (17.0)	150 (83.0)
Registration of responsible professional	39 (22.0)	141 (78.0)

In the immediate postoperative period, the variables with the highest percentage of completion corresponded to the time of entry into the Post-anesthesia Recovery Room and the record of the professional responsible, both with 22.0% of completion, while the lowest percentage was related to the administered medications, with only 2.0% of complete records. It is also evident that the complete record of vital signs of the patient in this period was also below expectations, since the record of blood pressure was identified only in 30 (16.6%) of the medical records, heart rate in 26 (14.5%), respiratory rate in 10 (5.5%) and temperature in only 7 (3.9%).

Among the participants of the study to investigate the professional knowledge about the proper filling of information in surgical procedures and factors that may be related to improper completion of the checklist, the mean age was 40.7 years, with minimum age of 26 and maximum of 64 years; among the professionals, there was a predominance of females (42; 89.4%) and assistants working in the surgical clinic (25; 53.2%). Data on the knowledge and appropriate filling out of information on surgical procedures among professionals are described in Table 2.

Data found evidenced that only 24 (51.0%) of the professionals were aware of the second global challenge of the World Health Organization for Patient Safety: Safe surgeries save lives, and that although 29 (62.0%) professionals reported knowledge of the Ministry of Health's protocol for safe surgery, 32 (68.0%) professionals were unaware of the form made available by the institution for use in verifying information on surgical times.

The training for applying the Surgical Safety Checklist in the unit was considered inadequate/not performed by 41 (87.0%) professionals, and 34 (72.0%) professionals stated that the Surgical Safety Checklist supports safe care and quality patient care, contributing positively to the reduction of adverse events in surgical procedures.

Table 2 – Knowledge and proper filling about information in surgical procedures. São Cristóvão, SE, Brazil, 2018

Items	Yes	No
	n (%)	n (%)
Meet the World Health Organization's second global challenge for patient safety: do safe surgeries save lives?	24 (51.0)	23 (49.0)
Do you know the Ministry of Health's protocol for safe surgery?	29 (62.0)	18 (38.0)
Are you familiar with the form made available by the institution for checking surgical times?	15 (32.0)	32 (68.0)
Were you trained to properly fill out the Surgical Safety Checklist?	6 (13.0)	41 (87.0)
Do you consider that the checklist supports safe care and quality care?	34 (72.0)	13 (28.0)
Do you think that the checklist should be filled out by only one professional?	17 (36.0)	30 (64.0)
Do you think that only the nurse can fill in the checklist?	14 (30.0)	33 (70.0)
Did you know of any adverse events from surgical procedures performed at the institution?	26 (55.0)	21 (45.0)
Do you consider that the staff dimensioning is adequate for the sector?	16 (34.0)	31 (66.0)
Do you consider the communication among the sector team effective and satisfactory?	21 (45.0)	26 (55.0)
Do you feel satisfied in your workplace?	39 (83.0)	8 (17.0)
Do you feel safe to perform a surgical procedure in the institution?	20 (43.0)	27 (57.0)

Regarding the completion of the checklist by only one professional of the unit, most professionals (30; 64.0%) consider that its completion is not exclusive to a single professional; in addition, 33 (70.0%) professionals consider that its completion is not exclusive to nursing, representing a common assignment to the care team. It is noteworthy that 26 (55.0%) professionals reported having already had knowledge about adverse events resulting from surgical procedures in the institution, 31 (66.0%) considered the staffing of the units inadequate and 26 (55.0%) reported a communication gap between the team of the sector.

Satisfaction with the work environment and the professional's safety in performing their own surgeries in the institution where they work were also considered in the study, with only 8 (17.0%) professionals reporting dissatisfaction with the workplace and most professionals (27; 57.0%) reporting that they do not feel safe to perform their own surgical procedures in the institution, representing an important factor to be considered for the adoption of measures aimed at the safety of the surgical patient.

Discussion

The quality of surgical records in patients' charts is a constant challenge for Brazilian public hospitals, since it is not enough just to identify the flaws, but to investigate their causes with those who record.

The main difficulty in conducting the research was related to the access to the surgical team, especially the medical staff and the surgical clinic staff due to the high demand of procedures performed in the institution, being fundamental the approach of the professional at different times and the accessibility and persistence of the researcher throughout the collection process, besides the reinforcement of the benefits and ethical aspects of the research.

The limitation of the study was related mainly to the relatively small sample of professionals participating in the study, the fact that it was developed in a single hospital, and the descriptive analysis of the data; thus, the need to conduct comprehensive research in public and private hospitals with different realities is highlighted, to deepen the variables studied

and perform comparative analysis. Moreover, since it is also about the use of data from medical records, there are the limitations inherent in retrospective studies, such as the possibility of absence of records or incomplete data; however, this was an indicator evaluated by the study.

All record variables analyzed here did not reach more than 46.0% of presence in medical records. A research conducted in the surgical and medical clinics of a hospital in the Northeast of Brazil indicated that nursing professionals perform their records incompletely and often do not document the care provided, causing record failures considered basic, such as absence of schedules (up to 76.6%), use of illegible letters (up to 45.3%) and admission with conditions of patient arrival (up to 88.9%)[7].

The rate found of completion of the safe surgery checklist performed during the intraoperative period in the operating room of a public hospital in Brazil was 58.5%, representing average adherence to its use, even with a professional assigned to perform it[8]. Adherence to the checklist before induction of anesthesia, surgical incision, and removal of the patient from the operating room was evaluated by researchers who reported that only 67.4% were fully completed, with the checklist present in 95% of medical records[9].

The incompleteness of surgical records identified in this study increased as the patient went through the stages of the surgical periods, being lower in the preoperative period and higher in the immediate postoperative period. Research indicates that the completion of surgical information and use of the checklist, for example, is varied among professionals and is associated with factors such as culture and its understanding as tools for patient safety[10].

The adequate recording of the variables of the safe surgery checklist has proven to be widely effective for the safety of the surgical patient; however, gaps in its completion, resistance in its adherence, and universal barriers in its use are still identified, which may compromise surgical patient care[8-9,11].

In patient safety, it is necessary to go beyond the identification of failures, as it is necessary to investigate the causes or the local contexts that may contribute to such failures. Most of the health professionals investigated here reported satisfaction with their workplace, as well as being aware of the national/international protocols/goals on safe surgery and of the importance of the safe surgery checklist. However, they considered the number of staff insufficient, communication among the team not effective, and they were not trained to fill out the institutional forms.

This study identified a relevant tripod for information records: effective communication, staff dimensioning, and institutional capacity building/training. These factors can raise the professionals' own feeling of non-safety if they must undergo surgical procedures in the institution. Effective communication and adequate staffing among professionals are critical to comprehensive health care and surgical patient safety. Communication is one of the universal barriers to adherence to the use of protocols and checklists[11].

Effective communication among professionals is fundamental to the quality of health care and can be influenced by three aspects: health literacy, cultural competence, and language barriers; the impairment of one of these factors can negatively influence communication among professionals and compromise health care, which makes it essential to adopt measures to promote effective communication[12].

The staff dimensioning consists in the adequate quantitative and qualitative prediction of professionals to meet the needs of the assisted population, respecting the particularities of the health systems, aiming to provide quality care and safety to the professional and patient; in this context, the perception and realization of inadequate staff dimensioning can negatively influence the care[13].

The lack of human resources is described in the literature, for example, as one of the factors that hinder the decision making of professional nurses in the operating room[14], and the lack of human resources can represent a problem for patient safety. Safe care has been widely discussed in health care, and the adequate dimensioning positively influences not only the

professional safety, but also the quality and safety of patient care[15].

Knowledge about patient safety, personal influence on safety, professional attitude[16], as well as familiarity and adherence to standardized protocols for the promotion of patient safety are fundamental factors for the dissemination of patient safety culture[8-9,17]. A survey conducted in two large surgical centers showed that only 56.7% of professionals mentioned having received training for proper completion[18]. In turn, most professionals in this study reported not having received training to fill out the surgical information present in the safe surgery checklist.

Professional knowledge about surgical adverse events associated with appropriate professional behavior and attitude is essential for the safety of surgical patients, and the implementation of the checklist in health care units presents itself to guide an integrated work of the professional team and to enable, in addition to the safety of surgical patients, a better knowledge about the performance of the surgical team[19]. In this context, professional training is essential for the promotion of quality patient care, as well as the promotion of patient safety.

Moreover, this study highlights the importance of reinforcing, encouraging, and training health professionals to fill out the forms properly, because hospitals can often establish instruments with which employees do not feel confident or are even unaware of, which reflects deficiencies in the institution's internal communication and can compromise patient care.

Educating about patient safety is necessary so that health professionals can provide patient-centered care in an interdisciplinary way through evidence-based practice and continuous improvement of the quality of care, mainly through early detection and reporting of errors, as well as the adoption of behaviors aimed at harm reduction and teamwork[20].

Conclusion

This study identified that variables such as insufficient professional knowledge about surgical patient safety protocols, lack of training, inadequate staffing, and ineffective communication between the care team of the institution are variables that may be related to inadequate completion of surgical data on patient safety in the opinion of health professionals. Therefore, it is essential the adoption of professional, institutional, and educational actions focusing on surgical patient safety and the importance of proper completion of data in charts, medical records, and *checklist* for the reduction of adverse events in surgical procedures.

Collaborations

Almeida ACS, Andrade LA, Rocha HMN and Menezes AF contributed to the conception, design, analysis, and interpretation of the data, writing of the manuscript, relevant critical review of the intellectual content and final approval of the version to be published. Santana ITS, Farre AGMC, and Santos JYS contributed to the relevant critical review of the intellectual content, writing of the manuscript, and final approval of the version to be published.

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